



Procedures and Guidelines

DIRECTIVE NO. 405-PG-1410.2.1
EFFECTIVE DATE: Nov. 26, 2001
EXPIRATION DATE: Nov 26, 2006

APPROVED BY Signature: Original Signed By:
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Responsible Office: Code 405/ IFM Program /NTRO Project

Title: New Technologies for Re-engineered Operations (NTRO) Configuration Management (CM)
Procedure

PREFACE

P1. PURPOSE

This Procedure and Guideline (PG) establishes and describes the CM procedures to be used by the NTRO Project. It is written in accordance with the guidelines of GPG 1410.2.

P2. APPLICABILITY

This PG applies to all documents controlled by the NTRO Project. This includes configuration baselines, configured items identification, controlling changes to configured items and controlled documents, maintaining status tracking/accounting records, and information dissemination.

The requirements of this PG shall be implemented from documentation initial release through completion of the NTRO Project. It applies to all NTRO Project controlled documents.

P3. AUTHORITY

NPG 7120.5 NASA Program and Project Management Processes and Requirements
GPG 1410.2 Configuration Management

P4. REFERENCES

GPG 1410.2 Configuration Management
400-PG-1410.2.1 Configuration Control
405-FORM-0001 NTRO Document Cover Sheet

P5. CANCELLATION

None.

P6. SAFETY

None.

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P7. TRAINING

All personnel assigned to the NTRO project shall read and confirm that they understand these requirements, and shall demonstrate familiarity with the Centralized Configuration Management System (see P10.a). This shall be done by Jan. 31, 2002 for existing NTRO personnel, and within 30 days of assignment for new NTRO personnel.

P8. RECORDS

As defined in GPG 1410.2.

P9. METRICS

Time for NTRO processing of configuration change requests

Time for Program Office processing of configuration change actions submitted by NTRO

P10. DEFINITIONS

- a. Centralized Configuration Management System (CCMS) – the on-line electronic configuration management system used for the configuration control of NTRO Project documentation. The system is accessible from the GSFC Quality Management System (QMS) Home Page.
- b. Class 1 Change – a proposed change that impacts the functional requirements, design, scope, concept of operations, interfaces, and usability of a baseline configured item.
- c. Class 2 Change – a proposed change that does not fall within the definition of a Class 1 Change. This includes changes of an editorial nature or other minor corrections.
- d. Configuration Baseline – the point at which the configuration documentation is considered “frozen,” and any changes to that documentation, including release of new documents, must be reviewed and approved as described herein.
- e. Configuration Change/Approval Request (CCR) - a documented request to issue, change, revise, or delete a controlled document.
- f. Configuration Control Board (CCB) – the collective management team and technical advisors responsible for recommending the approval or disapproval of all proposed changes to configuration documentation. The CCB is chaired by the Project Manager or designee.
- g. Configuration Documentation – the technical documentation that identifies and defines a configured item’s functional characteristics.
- h. Configuration Identification – the process that applies identification conventions to configured

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items, e.g., unique numbering systems, etc.

- i. Configuration Management – the systematic control and evaluation of all changes to baseline design and documentation.
- j. Configured Item (CI) – an aggregation of hardware and software that satisfies an end use function and is designated for separate configuration management by the Project Manager.
- k. Controlled documents – those documents determined by the project manager to require control by the NTRO configuration management processes.
- l. Status Accounting – the activity that produces records and reports of baseline descriptions and all changes to the baseline. It includes such activities as maintaining the Controlled Documents List, status tracking of CCRs, status of CCB activities, status of CCR implementation, and the subsequent reporting of such information to personnel and organizations associated with the NTRO Project.
- m. Technical Lead – a specific person assigned by the Project Manager that is responsible for the delivery of a system or system element of the NTRO Project.

IMPLEMENTATION

1.0 INTRODUCTION

The NTRO CM process controls the project's assigned module systems (e.g. Position Description Management, and/or Budget Formulation) configuration baseline, tracks the status of configured items/controlled documents, and interfaces with predominant and subordinate CM offices. The process includes establishing configuration baselines, controlling changes to controlled documents, performing configuration status accounting, and distributing change information as necessary. This will be accomplished using the CCMS, which serves as the primary repository of configuration documentation and the central point for all configuration change requests and document reviews.

The NTRO project office is responsible for the configuration management of assigned module system development, integration, testing, and rollout activities. In general, NTRO Project controlled documents include all system documents and process documents which define requirements, specifications, development, performance, qualification, acceptance, interfaces, cost, schedule, etc.

Program Level controlled documents are those controlled documents that require the Program Manager's approval. These documents may be managed and controlled at the Project level, at the discretion of the Program Manager. These documents will be processed in the same manner as project-controlled documents.

2.0 AUTHORITIES AND RESPONSIBILITIES

The Project Manager is responsible for:

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- a. ensuring that the requirements of this PG, as well as those of GPG 1410.2 and 400-PG-1410.2.1, are complied with by all participating GSFC functional organizations and contractors
- b. designating which documents are to be under NTRO configuration control
- c. serving as Chair of the NTRO CCB. In this capacity, he/she shall:
 1. appoint standing and ad hoc CCB members
 2. authorize and schedule roundtable and emergency CCB meetings
 3. authorize Out-of-Board processing of CCRs to promote efficiency and productivity or to provide critical and emergency direction
 4. preside over project-level CCB meetings
 5. approve CCB meeting action items, if necessary
 6. serve as the final authority for approving or disapproving proposed changes
 7. identify CCRs that require processing to the Program Office.

The Technical Lead is responsible for:

- a. reviewing each CCR to identify additional systems and documents that might be affected
- b. documenting that the CCR is acceptable for processing
- c. determining whether the CCR merits a CCB meeting, out-of-board processing, or emergency processing
- d. assessing the merits of the requested change and making approval recommendations at the time the CCR is processed by the CCB
- e. identifying, assigning, and closing action items affecting the CCR
- f. serving as the technical advisor to the CCB Chairperson
- g. recommending to the CCB Chairperson the best possible solution for the disposition of the CCR

The Configuration Management Officer (CMO), or Configuration Manager, is responsible for coordinating all NTRO CM activities. He/she shall receive CCRs, prepare them for CCB processing, coordinate CCB meetings and reviews, ensure implementation of approved CCRs and notification of affected parties, and maintain all CM records for the Project.

The Deputy Project Manager/Resources Manager is the main programmatic advisor to the chairman, and acts as the project manager in the project manager's absence. The Deputy Project Manager/Resources Manager is responsible for thorough review of potential contractual, financial, manpower, and schedule impacts of all proposed changes.

The QMS Implementation Manager is the lead advisor to the chairman in all areas of product assurance. The QMS Implementation Manager is responsible for reviewing proposed changes for impacts or potential problems in areas of configuration management, document management, quality assurance, safety, and the GSFC QMS.

Ad-Hoc CCB members may consist of process team leads, contractors, and others that could affect or be affected by the proposed CCR.

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Project Personnel are responsible for using the latest version of controlled documents, and for using the CCMS Controlled Documents List and other applicable CCMS functions.

3. CONFIGURATION ITEMS

Specific Configuration items (CI) shall be identified as the principle elements which define the assigned module systems. Major deliverable system components (e.g. System Extensions) and certain project documentation are considered to be configured items.

CI documentation is required to define and document the development and acceptance of each item. CI documentation includes but is not limited to the following: requirements documents, design documents, specification documents, process diagrams, procedures, plans, reports, reference documents, etc.

Only those CI documents which are necessary to document the system requirements, design, architecture, performance, physical characteristics, acceptance, cost, and schedule will be controlled at the NTRO Project level, unless otherwise directed by the Program Office.

The NTRO Project QMS Implementation Manager and Project Manager shall work with the Technical Lead and various process team leads to develop a listing of the configured items, the documentation required for each item, and the approval level required. Controlled documents will be listed on the CCMS via a controlled documents list.

4. CONFIGURATION IDENTIFICATION

4.1 BASELINE

The baseline is established at a point in the project or system development process where it is necessary to define a departure point for beginning formal controls over future changes to documents and or processes. Document and process baseline occurs on submittal of the document to the project CMO for entry into CCMS.

The baselines are documented by approved configuration identification, documents and processes, which shall be the basis for control of changes. Once a configuration baseline is established, all changes to the system configuration must be initiated via a CCR, and shall be processed through the NTRO Project CMO. For hard-copy CCR submission, GSFC Form 4-35 is available on the Goddard Directives Management System. However, the preferred means of initiating a change is electronically, using the CCR function of CCMS.

4.2 DOCUMENT NUMBERING AND IDENTIFICATION

All NTRO controlled documents shall be assigned a unique document control number using the standard CCMS numbering system. The document number will consist of the organization code, category (e.g. ANYS for analysis, PROC for procedure, etc.), four-digit number, and a sequential revision letter (if applicable). It will

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be in the form 405-PROC-XXXX-Z, where XXXX is a sequentially assigned number and Z represents the revision letter. An example is 405-FORM-0001, referenced below.

Documents shall have a cover sheet that includes the document title, name and organization code of responsible organization, an approval/effective date, expiration date (if available), and a document control number. The front cover page is NTRO Form 405-FORM-0001, and is available on CCMS. The cover and each subsequent page (when practical) of controlled documents shall include a footer referring the user to the CCMS to verify that the document is the correct version.

Program-level documents shall be identified as such on the cover of the document in the "Responsible Office" block. Additionally, the Program-level release authority's typed name and original signature shall appear in the "signature" and "name" blocks on the signature page of the original document. The viewable document on CCMS will indicate, in the signature block, the phrase "Original Signed by:" followed by the typed name and title of the releasing authority.

5.0 CHANGE PROCESSING

5.1 DOCUMENT CHANGE PROCESS OVERVIEW

Changes to controlled documents may be initiated by submitting a CCR to the CMO, but the preferable method is by submitting a CCR form electronically using the CCMS. Any necessary attachments will be submitted directly to the CMO. The CMO will review the submittals for completeness of information, obtain a listing of affected documents, and initiate CCB review. The CCB will review, comment, and make recommendations for approval, disapproval, or action items. The CCB Chairperson makes the final determination for contested decisions. Once the CCB has approved the changes, the CMO will update the document and process for revision or release. The CMO will notify project staff members by email when controlled documents have been updated.

5.2 CHANGE PRIORITY

Several business days prior to a routine CCB, the CMO will issue a CCB agenda that lists the CCRs to be discussed at the meeting and any proposed errata. CCRs will be prioritized as follows:

- a. Emergency – The CCB Chairman calls a special CCB meeting or consults with CCB members and acts upon the CCR within 24 hours of receipt by the CMO.
- b. Urgent – The CCB convenes and acts upon the CCR within 1 week of receipt by the CMO.
- c. Routine – The CCB convenes and acts upon the CCR within 2 weeks of receipt by the CMO.

The CMO may issue special notices for urgent CCRs. The CMO will work with the CCB Chairman and Technical Lead to deal with emergency CCRs on a case-by-case basis. The Project Manager and Technical Lead are authorized to reclassify requests and specify CCB approval levels.

5.3 CONFIGURATION CONTROL BOARD

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Once a configuration baseline is established, all changes to NTRO controlled documents or processes shall be controlled through a CCB review.

5.3.1 Configuration Control Board Process

The NTRO Project Level CCB shall establish a configuration baseline for each configured item. A CCR is written using CCMS, and the CCB members will receive an email request for review. The CCB members will review the initial generation and change impacts to the defined configured items from all aspects, e.g. technical, operations, logistics, schedule, collateral impact, cost, documentation, contractual, etc. They will evaluate and submit recommendations for proposed changes. The CCB Chairman will make the final decisions on all CCB recommendations.

5.3.2 CCB Membership

At a minimum, the normal members of the NTRO Project Level CCB are the Project Manager, Technical Lead, Deputy Project Manager/Resources Manager, Process Team Lead, CMO, and ad hoc members as required.

5.3.3 CCB Meetings

CCB meetings will be scheduled at the discretion of the CCB Chairman. CCB documentation will be forwarded to each member for review prior to the scheduled meeting. The CCB will review the CCR, assign and resolve any actions necessary, and recommend approval or disapproval.

The CCB Chairperson, Technical Lead, and Process Team Lead can approve changes. The CCB Chairperson maintains final approval authority.

5.3.4 Configuration Status Accounting

The CCMS will be used to record, maintain and report the information needed to effectively manage the defined Configured Items. The Configuration Manager shall generate and maintain the following status accounting reports, as necessary.

- CCR Status Reports. The CCR Status Reports identify each CCR that has been submitted to the CCMS for processing. CCMS is used to track the status and final disposition of all CCRs.
- The project's Controlled Documents List will be the CCMS listing of controlled documents.

5.3.5 Implementation of Approved Changes

Changes to documents require proper identification. Changes will be implemented by the proper use of Change Pages or revision of the document, and the appropriate Document Change Records.

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5.3.5.1 Change Pages. Change pages may be used to effect changes to controlled documents when the extent of change does not warrant document revision. Change pages will be complete reprints of pages suitable for incorporation into documents by removal of old pages and incorporation of new pages. Change pages will contain the document identification number as assigned. However, the date listed below the identification number will be the date the CCR was approved.

A change bar may be placed in the margin adjacent to and encompassing all changed portions. Change bars, if used, will only be placed on change pages, and not in newly issued revisions. Change numbers are assigned in sequence, beginning with number 1, against the original issue of the document (baseline), and continue in sequence regardless of subsequent revisions of the document.

5.3.5.2 Document Revision. Revision may be warranted when, in the opinion of the CMO or the Project manager, the use of change pages is not appropriate, or the quantity of change pages would make the document awkward. A revision is a complete reissue of the document. Identification numbers for revised documents will be the original identification number followed by a sequential revision letter.

Each revised document will include all changes that have previously been approved. No editorial or other changes will be made during revision unless approved by the CCB.

5.3.5.3 Change History Log. All CM Controlled documents will contain a Change History Log sheet that identifies changes within the document. The Change History shall describe all changes, including detailed usage of Change Pages. Changes will reference the CCRs that approved the changes.

5.3.5.4 Controlled Documents List. For all changes, the CMO will update the CCMS document records to indicate approval or disapproval, and notify the requester. Project personnel will be notified, at least monthly, of changes to the List.

Controlled documents that are canceled or become obsolete will be indicated in the CCMS, with a reference to the applicable CCR. Canceled and obsolete hard copies will be marked as "OBSOLETE" and may be retained in the Project or Directorate Library for historical purposes. Other hard copies shall be destroyed.

5.4 External Documents

External project documents are assumed to be the latest version available, and are only controlled by NTRO when a certain version needs to be specified. In that case, the applicable revision or release/date is identified in CCMS. If the Program or Project office chooses to implement a different revision or release of an external document, this shall be processed as a Class 1 configuration change.

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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	Nov. 26, 2001	Initial Release